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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/602,759

06/25/2003

Kenji Funamoto

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12/13/2006

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EXAMINER

PATEL, KANJIBHAI B

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,759

Applicant(s)

FUNAMOTO, KENJI

Examiner

Kanji Patel

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,8-11,14,16,17,20 and 22 is/are rejected.
- 7) ☒ Claim(s) 4,5,7,12,13,15,18,19 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/25/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. Information Disclosure Statement submitted on 6/25/003 has been considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 8-11, 16-17 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Baron (US 6,963,365 B2).

For claims 1 and 9, Baron discloses a digital image data correction method (Figures 1-6), comprising:

a first step of correcting an optical distortion component in a predetermined direction of optical distortion included in digital image data (column 3, lines 55-61; optically distorted image is corrected in vertical direction providing predetermined

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direction in first step; see more details in column 4 line 38 to column 5 line 50; Figures 3-5); and

a second step of correcting an optical distortion component in a crossing direction crossing the predetermined direction of the optical distortion, separately from the correction of the optical distortion component in the predetermined direction (column 3, lines 55-61; optically distorted image is corrected in horizontal direction providing second step in crossing direction; see in more details column 4 line 38 to column 5 line 50; Figures 3-5).

For claims 2 and 10, Baron discloses the digital image data correction method according to claim 1, wherein the digital image data which has been corrected in one of the first step and the second step is corrected in the other of the first step and the second step (column 5, lines 40-60; Figures 3-5).

For claims 3 and 11, Baron discloses the digital image data correction method according to claim 1, wherein the digital image data which is uncorrected in the first step and the second step is respectively corrected in the first step and the second step, and the digital image data which has been corrected in the first step is synthesized with the digital image data which has been corrected in the second step, so that the optical distortion is corrected (Figures 2-3).

For claims 8, 16 and 22, Baron disclose the digital image data correction method according to claim 1, wherein a pixel on a corrected coordinate of the corrected digital image data is interpolated with pixels around an uncorrected coordinate of the uncorrected digital image data corresponding to the corrected coordinate, so that the

optical distortion component is corrected (at least column 5, lines 40-50; magnification corresponds to an interpolation).

For claim 17, Baron disclose a digital image pickup apparatus (Figure 6) comprising:

an optical lens (column 3, lines 33-35; also element 602 in Figure 6) which images an object (601 in Figure 6) to be photographed;

a conversion component which photoelectrically converts the imaged object, so as to output digital image data showing the object (column 3, lines 30-33; column 7, lines 7-10);

a storage component (column 3, lines 44-45; element 610 in Figure 6) which stores the digital image data therein; and

a correction component (horizontal magnification and vertical magnification are used to correct optical distortion as shown in Figures 1-3) which separately corrects an optical distortion component in a predetermined direction of optical distortion included in the digital image data and an optical distortion component in a crossing direction crossing the predetermined direction of the optical distortion (column 3, lines 55-61; column 7, lines 7-20; column 5, lines 20-60).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baron (US 6, 963,365 B2) as applied to above claims and further in view of Higashiyama Yasunari (JP 11-250240, ABSTRACT---IDS).

For claims 6, 14 and 20, Baron does not clearly disclose an amount of data conversion due to the optical distortion is approximately expressed by a polynomial, which depends on a distance from an optical center of the digital image data. However, Higashiyama Yasunari discloses a digital image pickup device for operating distortion correction by YUV data comprising an amount of data conversion due to the optical distortion is approximately expressed by a polynomial, which depends on a distance from an optical center of the digital image data (see abstract). Baron and Higashiyama Yasunari are combinable because they both are in the same field of distortion correction in the imaging device. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Baron by the teaching of Higashiyama Yasunari to express the optical distortion by a polynomial approximately. Because such a modification will provide a digital image pickup device in which an arithmetic time can be shortened, and the next photographing can be quickly prepared by converting picture data into YUV data and thinning-out UV data at the time of operating distortion correction by an arithmetic operation by using an inexpensive lens with relatively large distortion as mentioned by Higashiyama Yasunari in abstract, lines 1-8.

Allowable Subject Matter

5. **Claims 4-5, 7, 12-13,15,18-19 and 21** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art on record fails to teach or fairly suggest, singly or in combination, wherein the digital image data is read along the predetermined direction from a storage component in which the digital image data is stored, so that the optical distortion component in the predetermined direction is corrected, and the corrected digital image data is written into the storage component parallel to the predetermined direction of the digital image data in which the optical distortion component in the predetermined direction is uncorrected and the digital image data is read along the crossing direction from the storage component, so that the optical distortion component in the crossing direction is corrected, and the corrected digital image data is written into the storage component parallel to the crossing direction of the digital image data in which the optical distortion component in the crossing direction is uncorrected.

Other prior art cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sussmeier (US 5,760,829) disclose a method and apparatus for evaluating an image device.

Ogino et al. (US 5,432, 404) disclose an apparatus for detecting a geometric distortion of an image on a display device.

Arndt et al. (US 6,088,098) disclose a calibration method for a laser-based split-beam method.

Silver et al. (US 5,235,528) disclose a method and apparatus for calibrating and correcting magnetic and geometrical distortions in an imaging system.

Koike (US 7,050,205 B2) disclose a method of correcting image data picked up from photographic film.

Sunakawa et al. (US 6,310,662 B1) disclose a display method and apparatus having distortion correction.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kanji Patel whose telephone number is (571) 272-7454.

The examiner can normally be reached on Monday to Thursday from 8 a.m. to 6:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bella, Matthew can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kanji Patel
Art Unit 2624
12/08/06


KANJIBHAI PATEL
PRIMARY EXAMINER